BRUHATH BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Name of the work: Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura

Second and Part Bill
Test Report

TEJUS
CONSULTANTS

Test Report on Cement

Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement
Date of Sample Tested	02.05.2019
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	39 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	356 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	2mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	27.50%	25 % to 35

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AE(WS)

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

Authorised Signatory

TEJUS
CONSULTANTS

TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	**Proposed Use**	PCC
Location/Source	At Site/Plant	**Date of Sampling**	02.05.2019
Period of Soaking	24 hours	**Date of Testing**	02.05.2019

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	663	632	672	
B	Weight of oven - dry sample gm.	651	628	661	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1686	1686	1698	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.583	2.842	2.655	2.693
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.843	0.637	1.664	1.381

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M.N.D
AE(NS)

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Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

Authorised Signatory

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	**3000** gms		
Type of Material	**Fine aggregate (River Sand/ M sand)**	**Proposed Use**	concrete
Sample Location	At Site/Plant	**Date of Sampling**	02.05.2019
		Date of Testing	02.05.2019

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	**100**
4.75 mm	212	212	7.07	92.93	**90 - 100**
2.36 mm	312	524	17.47	82.53	**75 - 100**
1.18 mm	411	935	31.17	68.83	**55 - 90**
0.600 mm	486	1421	47.37	52.63	**35 -59**
0.300 mm	750	2171	72.37	27.63	**8-30**
0.150 mm	620	2791	93.03	6.97	**0 - 10**
Pan	209	3000			-

Remarks : Satisfactory / Not Satisfactory

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Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	At Site/Plant	**Date of Sampling**	02.05.2019
		Date of Testing	02.05.2019

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	82	82	2.73	97.27	95-100
20.00mm	1400	1482	49.40	50.60	30-70
10.00mm	971	2453	81.77	18.23	10-35
4.75mm	452	2905	96.83	3.17	0-5
Pan	95	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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Bangalore - 560 092

TEJUS CONSULTANTS

Authorised Signatory

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight:	10000 gms

SIEVE ANALYSIS

Type of Material	12.5 mm down size	Proposed Use	Concrete
Sample Location	Plant/site	Date of Sampling	08.05.2019
		Date of Testing	08.05.2019

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	582	582	5.82	94.18	90-100
10.0	2286	2868	28.68	71.32	40-85
4.75	6521	9389	93.89	6.11	0-10
Pan	611	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS
CONSULTANTS

TEST REPORT					
Clients	Bruhat Bangalore Mahanagara Palike				
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore				
Contractor	Benaka Developers & Project Pvt.Ltd.				
Total Weight:	10000	gms			
SIEVE ANALYSIS					
Type of Material	20 mm down size		**Proposed Use**	Concrete	
Sample Location	At Plant		**Date of Sampling**	08.05.2019	
			Date of Testing	08.05.2019	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
40.00 mm	0	0	0	100	**100**
20.00 mm	272	272	2.72	97.28	**95 - 100**
10.00 mm	4902	5174	51.74	48.26	**25 - 55**
4.75 mm	4136	9310	93.10	6.90	**0 - 10**
Pan	690	10000			
Remarks :	✓ Satisfactory / Not Satisfactory				

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Authorised Signatory

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TEJUS
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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION FINE AGGREGATE
(IS-2386-PART-3)

Type of Material	**Sand/M sand**	**Proposed Use**	Drain
Location/Source	**At Plant/site**	**Date of Sampling**	08.05.2019
Period of Soaking	**24 hours**	**Date of Testing**	08.05.2019

Sl. No.	Test Property		TRIAL - 1	TRIAL - 2	TRIAL - 3	Average
A	Weight of sturated surface dry sample gm.		683	654	667	
B	Weight of oven - dry sample gm.		671	644	656	
C	Weight of Pycnometer Filled with water gm		1275	1275	1275	
D	Weight of Pycnometer + sample + water gm		1705	1685	1695	
E	Bulk specific gravity	B	2.652	2.639	2.656	**2.649**
		(C + A - D)				
G	Absorption (%)	(A - B) *100	1.788	1.553	1.677	**1.673**
		B				

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Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS
CONSULTANTS

TEST REPORT					
Clients	Bruhat Bangalore Mahanagara Palike				
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura				
Consultants	Tejus Consultants, Bangalore				
Contractor	Benaka Developers & Project Pvt.Ltd.				
SIEVE ANALYSIS					
Total Weight:	**3000** gms				
Type of Material	**Fine aggregate (River Sand/M sand)**		**Proposed Use**	Drain	
Sample Location	At Plant/site		**Date of Sampling**	08.05.2019	
			Date of Testing	08.05.2019	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing (Zone-II)**
10.00 mm	0	0	0	100.00	**100**
4.75 mm	244	244	8.13	91.87	**90 - 100**
2.36 mm	289	533	17.77	82.23	**75 - 100**
1.18 mm	512	1045	34.83	65.17	**55 - 90**
0.600 mm	564	1609	53.63	46.37	**35 -59**
0.300 mm	623	2232	74.40	25.60	**8-30**
0.150 mm	561	2793	93.10	6.90	**0 - 10**
Pan	207	3000			**-**
Remarks :		✓ Satisfactory / Not Satisfactory			

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Authorised Signatory

AE(NT)

Assistant Executive Engineer
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Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS
CONSULTANTS

Test Report on Cement	
Project	Improvements to roads and drains from Bhuvaneshwarinagar Park via Gopalappa Layout to Cofee board Layout Park Road and Surrounding areas (Cubic Apartments Area) in Ward No.7,Byatarayanapura
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement
Date of Sample Tested	08.05.2019
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	39 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	376 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	4 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	25.00%	

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Authorised Signatory

Assistant Executive Engineer
Kodigenalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Name of Work	:	Improvements to roads and drains Amruthanagara A sector and D.Munishamappa Layout in ward no 07.Byataryanapura
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	30.05.2019
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	30.05.2019
Type of material & Purpose:	BC	Date of testing:	30.05.2019
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	138	138.0	11.50	88.50	79 - 100
9.50	111	249.0	20.75	79.25	71 - 95
4.75	226	475.0	39.58	60.42	53 - 71
2.360	122	597.0	49.75	50.25	42 - 58
1.180	139	736.0	61.33	38.67	34 - 48
0.600	113	849.0	70.75	29.25	26 - 38
0.300	124	973.0	81.08	18.92	18 - 28
0.150	66	1039.0	86.58	13.42	12 - 20
0.075	100	1139.0	94.92	5.08	4 - 10
Pan	61.0				
Total	1200.0				

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Assistant Executive Engineer
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Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS CONSULTANTS

Authorised Signatory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**30.05.2019**
		Date of Testing	**30.05.2019**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	625	72	553	65
16.0	12.5	1212	110	1102	85
12.5	10.0	510	70	440	60
10.0	6.3	500	50	450	50
Total		**2847**	**302**	**2545**	**260**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.61
Elongation Index(%):	10.22
Combined FI+EL (%)	20.82

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Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	30.05.2019
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	850	852
2. Weight of Mixture after extraction, g	806	808
3. Weight of Bitumen	44	44
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	2.10	2.00
7. Weight of Bitumen & fines	46.10	46.00
8. Bitumen content in %	5.42	5.40
9. Average Bitumen content in %	**5.41**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	30.05.2019
Type of material & Purpose:	**BC**	Date of testing:	30.05.2019
		Oven Dry Wt.(gms):	806.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	100	100.0	12.41	87.59	79 - 100
9.50	65	165.0	20.47	79.53	71 - 95
4.75	135	300.0	37.22	62.78	53 - 71
2.360	100	400.0	49.63	50.37	42 - 58
1.180	85	485.0	60.17	39.83	34 - 48
0.600	85	570.0	70.72	29.28	26 - 38
0.300	45	615.0	76.30	23.70	18 - 28
0.150	60	675.0	83.75	16.25	12 - 20
0.075	75	750.0	93.05	6.95	4 - 10
Pan	56.0				
Total	806.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	30.05.2019
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	875	795
2. Weight of Mixture after extraction, g	830	754
3. Weight of Bitumen	45	41
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.30	4.00
6. Weight of fines, g	2.30	2.00
7. Weight of Bitumen & fines	47.30	43.00
8. Bitumen content in %	5.41	5.41
9. Average Bitumen content in %	**5.41**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	30.05.2019
Type of material & Purpose:	**BC**	Date of testing:	30.05.2019
		Oven Dry Wt.(gms):	830.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	98	98.0	11.81	88.19	79 - 100
9.50	102	200.0	24.10	75.90	71 - 95
4.75	111	311.0	37.47	62.53	53 - 71
2.360	116	427.0	51.45	48.55	42 - 58
1.180	82	509.0	61.33	38.67	34 - 48
0.600	60	569.0	68.55	31.45	26 - 38
0.300	78	647.0	77.95	22.05	18 - 28
0.150	51	698.0	84.10	15.90	12 - 20
0.075	60	758.0	91.33	8.67	4 - 10
Pan	72.0				
Total	830.0				

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Authorised Signatory

AE(Hqtrs)

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Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	30.05.2019
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	869	830
2. Weight of Mixture after extraction, g	824	788
3. Weight of Bitumen	45	42
4. Weight of filter paper before extraction, g	2.00	1.20
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.80
7. Weight of Bitumen & fines	47.00	44.80
8. Bitumen content in %	5.41	5.40
9. Average Bitumen content in %	**5.40**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	30.05.2019
Type of material & Purpose:	**BC**	Date of testing:	30.05.2019
		Oven Dry Wt.(gms):	824.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	85	85.0	10.32	89.68	79 - 100
9.50	115	200.0	24.27	75.73	71 - 95
4.75	119	319.0	38.71	61.29	53 - 71
2.360	124	443.0	53.76	46.24	42 - 58
1.180	80	523.0	63.47	36.53	34 - 48
0.600	60	583.0	70.75	29.25	26 - 38
0.300	76	659.0	79.98	20.02	18 - 28
0.150	51	710.0	86.17	13.83	12 - 20
0.075	40	750.0	91.02	8.98	4 - 10
Pan	74.0				
Total	824.0				

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Authorised Signatory

AE (Civil)

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	30.05.2019
Type of Mix :	Tack coat
Sample I/D :	1

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.760	0.742	0.755
Final weight of plate after application of tack Coat (c)	Kg	0.783	0.765	0.778
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.250	0.256	0.251
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AE (Lab)

Assistant Executive Engineer
Kodigehalli S...
Bruhat Bangal...
Ba...

Authorised Signatory

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03.06.2019
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.786	0.785	0.752
Final weight of plate after application of tack Coat (c)	Kg	0.809	0.808	0.775
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.250	0.256	0.251
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AE(LT)

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike

Authorised Signatory

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03.06.2019
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	865	835
2. Weight of Mixture after extraction, g	820	793
3. Weight of Bitumen	45	42
4. Weight of filter paper before extraction, g	2.00	1.20
5. Weight of filter paper after extraction, g	3.70	4.30
6. Weight of fines, g	1.70	3.10
7. Weight of Bitumen & fines	46.70	45.10
8. Bitumen content in %	5.40	5.40
9. Average Bitumen content in %	**5.40**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	03.06.2019
Type of material & Purpose:	**BC**	Date of testing:	03.06.2019
		Oven Dry Wt.(gms):	820.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	85	85.0	10.37	89.63	79 - 100
9.50	112	197.0	24.02	75.98	71 - 95
4.75	120	317.0	38.66	61.34	53 - 71
2.360	124	441.0	53.78	46.22	42 - 58
1.180	80	521.0	63.54	36.46	34 - 48
0.600	62	583.0	71.10	28.90	26 - 38
0.300	78	661.0	80.61	19.39	18 - 28
0.150	51	712.0	86.83	13.17	12 - 20
0.075	40	752.0	91.71	8.29	4 - 10
Pan	68.0				
Total	820.0				

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Authorised Signatory

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03.06.2019
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	874	790
2. Weight of Mixture after extraction, g	829	750
3. Weight of Bitumen	45	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.20	4.70
6. Weight of fines, g	2.20	2.70
7. Weight of Bitumen & fines	47.20	42.70
8. Bitumen content in %	5.40	5.41
9. Average Bitumen content in %	**5.40**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	03.06.2019
Type of material & Purpose:	**BC**	Date of testing:	03.06.2019
		Oven Dry Wt.(gms):	829.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	96	96.0	11.58	88.42	79 - 100
9.50	101	197.0	23.76	76.24	71 - 95
4.75	112	309.0	37.27	62.73	53 - 71
2.360	105	414.0	49.94	50.06	42 - 58
1.180	82	496.0	59.83	40.17	34 - 48
0.600	60	556.0	67.07	32.93	26 - 38
0.300	79	635.0	76.60	23.40	18 - 28
0.150	50	685.0	82.63	17.37	12 - 20
0.075	62	747.0	90.11	9.89	4 - 10
Pan	82.0				
Total	829.0				

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Assistant Executive Engineer
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Bruhat Bangalore Mahanagara Palike
Bangalore - 56

TEJUS CONSULTANTS

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**03.06.2019**
		Date of Testing	**03.06.2019**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	635	73	560	70
16.0	12.5	1225	112	1125	85
12.5	10.0	566	72	450	60
10.0	6.3	520	56	460	50
Total		**2946**	**313**	**2595**	**265**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.62
Elongation Index(%):	10.21
Combined FI+EL (%)	20.84

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Authorised Signatory

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Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Improvements to roads and drains Amruthanagara A sector and D Munishamappa Layout in ward no 07.Byataryanapura		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	**Date of Sampling**	**03.06.2019**
Sample Location	At plant	**Date of Testing**	**03.06.2019**

Sl. No.	Description		Test No.			Spec Limit (%)
			1	2	3	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	386.00	360.00	342.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	285.00	260.00	255.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	101.00	100.00	87.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	26.17	27.78	25.44	
5	Average Aggregate impact value	(%)	26.46			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Authorised Signatory

Asst.Ly.N.D
AE(W7)

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Name of Work	:	Improvements to roads and drains Amruthanagara A sector and D.Munishamappa Layout in ward no 07.Byataryanapura
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	03.06.2019
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	03.06.2019
Type of material & Purpose:	BC	Date of testing:	03.06.2019
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	155	155.0	12.92	87.08	79 - 100
9.50	121	276.0	23.00	77.00	71 - 95
4.75	216	492.0	41.00	59.00	53 - 71
2.360	132	624.0	52.00	48.00	42 - 58
1.180	134	758.0	63.17	36.83	34 - 48
0.600	120	878.0	73.17	26.83	26 - 38
0.300	124	1002.0	83.50	16.50	18 - 28
0.150	80	1082.0	90.17	9.83	12 - 20
0.075	50	1132.0	94.33	5.67	4 - 10
Pan	68.0				
Total	1200.0				

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AE(LQ)

Assistant Executive Engineer
Kodigehalli Sub Division
Bruhat Bangalore Mahanagara Palike
Bangalore - 560 092

TEJUS CONSULTANTS

Authorised Signatory